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MODEL SHIPS AND POWER BOATS

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Model Ships and Power Boats

INCORPORATING *Ships and Ship Models*

EDITED BY EDWARD BOWNESS

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Contents

The Ship's Log

In a magazine such as ours, where space is very limited, it is important that the space should be filled with the kind of material which will be of the greatest service to the readers. As we specialise in ship modelling, a subject of which there seems to be endless ramifications, the problem becomes very complex. To get some idea of the variety of interests included in the subject, we have only to mention the modelling of historical, naval and merchant ships, both coastal and deep sea. In addition we have working models powered by sail, steam or petrol. From some points of view the working model is the highest form of ship modelling. While some of our readers are very willing to concede this, other would disagree very emphatically. We would remind them, however, that to build a realistic working model of, for instance, a liner, correct to scale in its appearance on the water, and seaworthy in its behaviour, even under stormy conditions involves problems similar in kind, if not in degree, to those encountered in designing and building the full size ship. The designing, building and sailing of a model racing yacht, or a sail-driven prototype calls for all-round skill, craftsmanship and seamanship. The mention of petrol-driven boats at once calls to mind the Hydroplane. Many readers flatly refuse to consider these as being ship models at all, but they cannot be dismissed as easily as that. To make a hull which will lift itself until it is planing on top of the water, with its skin resistance cut down to the absolute minimum, and to make the hull seaworthy, so that it doesn't turn turtle when it meets a ripple is hull design carried to its extreme limit. This knowledge was found invaluable in the recent war, when it gave us the M.T.B.'s and similar high-speed craft. It has also given us the easily propelled hard chine hull, which has become practically the standard for cabin cruisers and motor yachts ; and no one can argue that these craft are unworthy subjects for the ship modeller. The planing hull is also being used in the recent full size racing yachts.

Having realised the complex nature of our problem the reader will understand the difficulty we have each month to utilise our limited space to the best advantage. For convenience we classify ship modelling under these headings : (1) Non-Working (Historical and Modern). (2) Power Boats (Speed and Prototype). (3) Yachts and Sailing Craft. In addition there are articles of general interest, such as descriptions of actual ships of all types, Correspondence, Book Reviews, Trade and Club news. We try to share the interest as equally as possible between these phases of ship modelling, but it is inevitable that from month to month one class or the other should be somewhat neglected. We would be glad to have the views of our readers on this matter, and to consider carefully any criticism or suggestions that may be offered. One solution is fairly obvious. If every reader would get another reader to buy the magazine the increased circulation would enable us to increase the number of pages, so that we would be able to deal more adequately with each phase of our hobby.

OUR COVER PICTURE

This month we have used a photo of P.S. *Empress of India* which was taken by Mr. G. W. Hillman off Shanklin, Isle of Wight, during the summer of 1949. The paddle steamer makes a lovely prototype for a working model and such a model is always admired at regattas.

OSCILLATING ENGINES

By W. L. BLANEY

MODEL prime movers have moved a bit in the last few years, and it is now possible for anyone interested to walk into the nearest toyshop, and come out with a powerful engine, beautifully made and capable of pulling or pushing any model he may have in mind.

In such circumstances it seems as if the last word has been said about the future of model power plants. H'm! I wonder.

Personally, I cannot for the life of me, understand why we could not have "thought up" the compression-ignition engine long, long ago.

If only some chemical johnny had whispered "ether"!

There was a little engine exhibited on the stand of W. J. Smith at the very first aero exhibition which closely resembled the model diesel of today, except that it would not work. It was a two-stroke, $\frac{5}{8}$ in. bore, $\frac{3}{4}$ in. stroke, with a very nice laminated tractor screw of 9 in. diameter. The method of ignition was by hot tube, kept red-hot with a very tiny blowlamp.

With the idea of economising weight the carburettor was omitted. The crankcase drew in a charge from a bypass in the vaporising coil of the blowlamp. Phew!! Of course, it would not work but, in those days, we did hope that it would. However, after nearly setting fire to Olympia a few times, I had reluctantly to give up the idea and get on with Mr. Smith's blueprints for his famous $1\frac{3}{8}$ in. × $1\frac{3}{8}$ in. aero engine which were in great demand at that time. What became of that model I do not know, but I believe some blighter "snaffled" it.

Now, quite a few chaps have acquired their introduction to the pleasures and pains of model marine engineering through the medium of that much underrated little prime mover, the oscillating engine, and it is about them that I am now "letting myself go." Yes! You can still see them in the toyshops among the diesels.

Who among us has not paused for a second look at a gleaming little brass boiler with its wiggle-waggle engine and surreptitiously bought one for "Junior" to play with? How does it work, Pop?

I am proposing to go into the matter of "how it works" in these few notes and I hope to interest some of you fellows although I would not dare to say instruct. As a confirmed "soaked to the skin" model boatman with mechanical preferences, I have spent many happy hours (and not earning much fame) playing with oscillating engines. Pumps may fail and piston valves stick but I still get a kick out of these simple things. There have been one or two occasions when I forsook my ideal—I nearly wrote "idol"—and dallied with fixed cylinders but, for those occasions, I have regrets.

Now, oscillating cylinders are not confined entirely to the range of the toyshop. You will find if you look up marine history that one of the greatest ships that was ever built ("great" in many ways) had oscillating cylinders in her main engines. I refer, of course, to the *Great Eastern.*

They have a beautiful model of these engines in the Science Museum, London. Have a good look all round them when you are that way again; their design is a monument for all time to the wonderful capacity of the early marine engineers.

"Men like us" maybe, but giants in imagination and foresight.

The engines of the *Great Eastern* were designed for

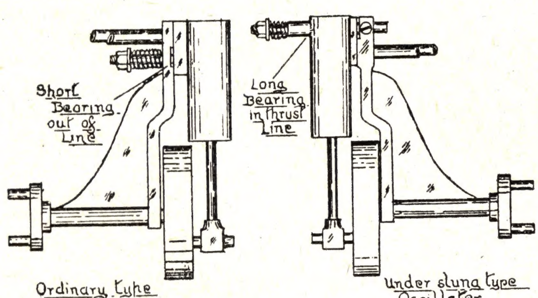


Fig. 1.

Above: Ordinary Type and Underslung Type Oscillating Engine.

To Right: Cylinder and Cylihder Plate showing ports Underslung Type.

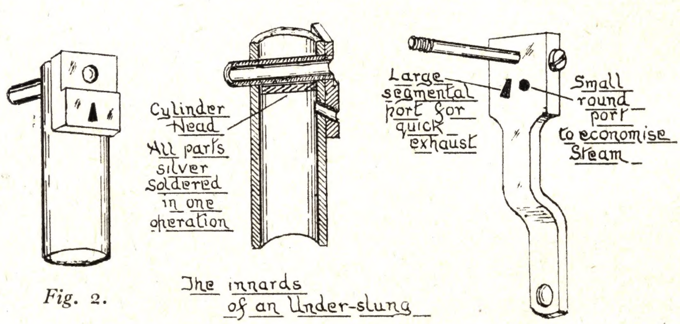


Fig. 2.

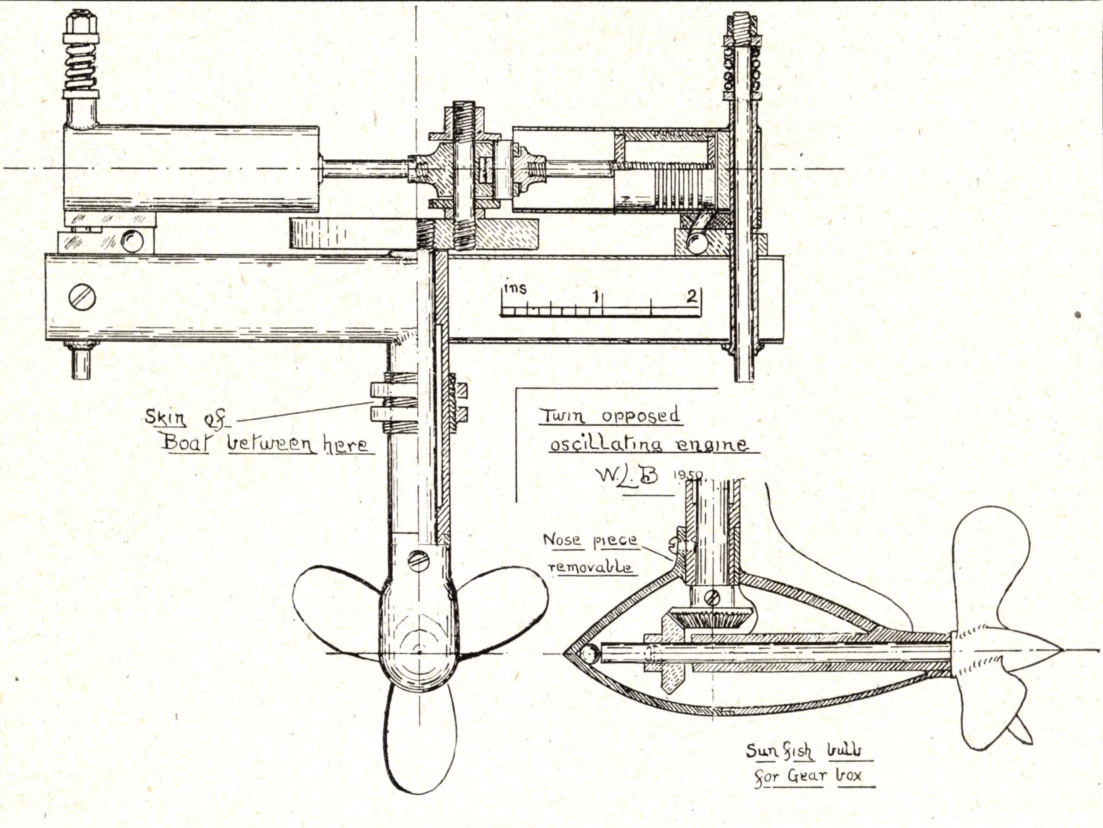


Fig. 3. Horizontally-opposed oscillating engine for boat. Note: cylinders may be arranged transversely or fore-and-aft

a relatively slow speed to drive paddle wheels of immense diameter with a direct push from trunnion to crankpin. However, that classic example of oscillation must not create the idea that oscillating cylinders mean slow speed. By no means. I once knew a chap who had a nice tie-pin in gold and silver, in the form of a tiny oscillating engine. He fed it from a small " bottle " of compressed air in his pocket. You could not detect the motion ; it just " buzzed " at several thousand r.p.m. The penny steamers of good Queen Victoria's time that plied a regular service on the Thames were mostly fitted with oscillating-cylinder engines. Memory fails me for the name of the boat but I do distinctly remember one boat that had a single cylinder. I can see that old engineman now juggling with his levers to coax her over dead centre.

All these large scale engines had slide valves on their backs worked by a combination of levers from eccentrics on the crankshaft. The steam and exhaust passed through the trunnions on which the cylinders " rockered."

Now, it is not slide-valve oscillators that I am going to include in this article. If you are going to make a model of an historic engine, well and good; go ahead ! But, to my mind, the chief charm of the oscillating engine is its extreme simplicity ; the cylinder opens and shuts its own ports while rocking to and fro.

Some long while ago, when I was trying to improve the performance of a small toy engine, it occurred to me that it might be better to swing the cylinder on a fixed spindle across its top and have the ports below this pin. (See Figs. 1 and 2.) This—which I call the underslung type—I have adopted and, after many years' trials, consider to be the most suitable for hard wear.

I have had one in use fairly regularly for almost eight years without repair, the only attention required, beyond frequent cleaning, being one new piston owing to the original wearing out.

There are, of course, other methods of steam distribution. One, which I designed some years ago for Mr. E. Midson, was known as the Midson engine. This was a three-cylinder engine rocking on an overhead trunnion. In this case the trunnion was

a hollow tube with an internal partition down the middle ; one side steam and the other exhaust. The cylinder-head encircled this with a sleeve and alternately connected with steam and exhaust as it " rockered." It was quite a good engine when well made. Steam direct on to piston head, thrust all in line, port faces kept in close contact, etc. However, there are times when things have to be taken to pieces for cleaning and this type is not so " get-at-able " as the one I am sponsoring.

Just recently I have put together a pair cylinder job of this type (see Fig. 3). Apart from the engine itself there are one or two features incorporated which I am trying out.

At first glance it appears to be an outboard engine but actually the engine is inside the boat and only the propeller and gearbox, with a little bit of skeg, is below the hull. Driving the propeller by mitre gearing is no new idea, of course ; the reason I have adopted it is because I consider a pair of hardened steel gears to present no more friction than an articulated shaft, and look at the underwater gear you get rid of.

Personally, and at the risk of raising a storm, I consider a long length of naked shafting under a boat to be as out of date as overhead shafting in a factory. Get the power close to the work.

Now a word about oscillating cylinders for pumping. Pumps may come and pumps may go, and I have seen a great many that would not go on for ever.

When you come to consider the working conditions of the suction valve of an orthodox pump it seems a marvel that it works at all. Just for a moment try to visualise the action of the automatic suction valve whether it be ball, mushroom or flip-flap ; one split second it is resisting umpteen pounds' pressure and the next opening to the tiny suction of vacuum caused by the withdrawing ram, and it keeps on doing it for quite a while under expert supervision. Some help it along with a scoop which is really a two-stage pump and some are now considering an out-and-out two-stager. But !

Some of my best friends have assured me that their pumps never fail. Well ! I would not like to lose their regard so will refrain from further comment. Anyway, why not mechanical valves that open and shut positively ?

It seems to me that this is where the underslung oscillator answers very nicely. The ports, of course, have to be much larger in proportion than a steam engine (where a limited amount of wiredrawing is an asset) and the whole issue can be—and should be —submerged in a tank fed from the water supply.

We used to call this arrangement a " drowned " pump. I give a sketch of such a pump fitted into my boat *Little Man* (see Fig. 4).

At various times I have used this same pump as an air pump for the condenser, a bilge pump, and a boiler feed, and, dare I say it—it has never failed.

I remember in the early days of the Society of Model Engineers, there was a member who had an oscillating feed pump on a well-made little locomotive called the *Don*, or maybe that was the gentleman's name.

He had it so fitted that what would be the reversing wheel in the ordinary way, was the actuating wheel for the pump. You just caught hold of the little handle and wound it up.

It was not an underslung type, but it worked all right against high pressure.

Just a few more notes about main engines : Cylinders should be of thin gauge tubing, and pistons hollow for lightness. I make my cylinders of steel

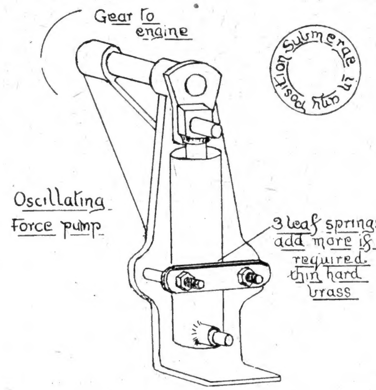


Fig. 4. Oscillating Force Pump.

tube and produce a more or less true bore by driving a hardened steel plug right down (*after the cylinder is made up*) and then tap, tap, tapping the outside all over until the plug can be withdrawn.

That tapping business can take a long time, so if you know a better way to produce a true bore in thin tube, do it your way. Grinding is apt to distort. Pistons are bored and turned in cast-iron with a cap at each end, screwed on to the piston rod. They are turned on the outside with a series of labyrinth grooves. You don't need a " diesel fit " to get a good result ; although any old engine wants a decent relationship between cylinder and piston if you don't want the steam to pour out.

A single cylinder engine doesn't require a safety valve or stop valve on the boiler. Most boilers have one for the look of the thing. Set the engine at exhaust mid-stroke, while you get up steam, and when she is ready to go, give the flywheel a flip.

Examine the port faces fairly frequently during the early runs and scrape off the bright spots. When you get them right, they will hold back the steam until the right pressure is reached, and then " splutter " like any other self-respecting safety valve.

Lubrication can be quite simple. Just a few bits of small bore copper tube, with a thread of " worsted " pulled through them while they are straight. Solder one end of these into a central box with a hinged lid, and bend the other ends down until the thread just licks the moving parts. If you must have forced lubrication use an oscillating cylinder pump.

GLUES and ADHESIVES for Marine Modellers

PART I

By H. B. TUCKER

EVERY builder of wood hulls for marine models uses adhesives whatever type of model is being constructed and whatever method of building is employed. Apart from the fact that showcase models do not go afloat, the same considerations apply as for a model sailing yacht or model steamer hull.

With the advent of modern methods of gluing, quite a number of new technical terms have come into being, and I will commence by explaining a few of the more common ones.

Assembly. The placing together of the components of a glued joint.

Assembly Time. The time interval between the spreading of the adhesive on the components and the application of pressure to the assembly. This is divided into *Open Assembly Time* (the time between the spreading and actual assembly) and *Closed Assembly Time* (the time between actual assembly and the application of pressure).

Bleed-through. The penetration of adhesives through veneers to their outer surfaces.

Clamping Time. The time a joint must be kept under pressure.

Crazing. Fine cracks through an adhesive in its hardened state, especially when there is a thick glue-line.

Glue-line. The layer of adhesive bonding two surfaces of a glued joint.

Pot Life. The time glue remains usable after being prepared for use.

Setting Time. The time taken for glue to harden in a joint.

Shelf Life. The time during which a glue remains in good condition while in storage.

There are other terms which apply only to " resin " glues, which will be explained when we come to that branch of the subject.

Although in the past, Scotch glue (cabinet glue) was often used by model builders, it is really very unsuitable for the purpose. To make a good joint with this glue, it must be spread hot, and assembly and clamping completed before the glue has time to cool off. This is possible where comparatively small surfaces have to be dealt with, but when one is dealing with large surfaces that have to be exactly aligned (as for instance, the layers of a bread-and-butter hull), it becomes a sheer impossibility. Another disadvantage is that this glue is readily soluble in water and any joint made with it must be completely and thoroughly protected from moisture.

Some of the proprietary brands of fish and chemical glues are better from the point of view of giving sufficient assembly time, but these likewise are readily soluble in water, and not really suitable for models, other than showcase models which do not come in contact with water. Moreover, they are costly and not really suitable for model making, except possibly for deckwork on showcase models.

With one exception no glue is waterproof in the sense that a rubber boot is waterproof, but some are more water-resistant than others. Further, all glues are porous to a greater or lesser extent. Hence all glue joints must be protected from moisture by paint or varnish.

Later in these articles I shall have something to say about moisture in the wood from which the component parts of a glued joint are fashioned, but for the moment it will suffice to add that since wood also is porous, water can be conveyed through the wood fibres to the glue-line of a joint. Therefore, it is essential to protect the wood as well as the glue joints from moisture.

I referred above to the fact that there is one adhesive that is waterproof and non-porous, but its use is very limited in marine modelling. I was referring to adhesives similar to Durofix. Roughly this glue consists of a celluloid in solution, the solvents being either acetone or amyl-acetate. Now, cellulose paints are unsuitable for any marine models except showcase models because they have insufficient adhesion and do not " key " properly into the wood pores. Hence, though these paints form an absolutely waterproof skin over the wood, once they are chipped, water penetrates beneath them and they lift. In this state, cellulose paints are prone to flake off, and even if they do not flake, the wood of the hull rapidly becomes sodden and any glued joints disintegrate. Cellulose paints can be used, however, with good effect on showcase models and give a fine finish. Where small fittings have to be stuck on to the cellulosed surface (as, for instance, brass ports, deckhouse window frames, etc.), Durofix is admirable. As its solvent is the same as for cellulose paints, the fittings embed themselves and key right into the surface.

About 25 years ago, a very beautiful " A " class model, *Queen Bee*, was built by her owner, Mr. J. D. Sparke. She was a planked model with a deck laid in planks. No glue was used in her construction, but the plank seams were made with yacht varnish. These were, of course, absolutely waterproof and water-resistant. If any builder of planked model hulls cares to employ this method, it will be found absolutely satisfactory, but it is essential for the plank edges to be fitted *exactly* as varnish has no real gap-filling properties. The *modus operandi* is to fit the planks one by one. When fitted, the plank (or strake) is removed and varnished on both edges, being given two coats. The edge of the plank against which the new plank is to fit is then given a thick coat of

varnish, as is also the abutting edge of the new plank. Plank-end housings on stem and transom are treated similarly, also the parts which rest on the ribs. The plank is fixed in place while the varnish is wet. The great drawback to this method is that time must be given for the preliminary coats of varnish to dry thoroughly before the next coat is applied. Further, it is only applicable to planked hulls.

It will be observed that in the previous paragraph I made use of the term " gap-filling." A *close-contact adhesive* is one for use only in joints where the surfaces can be brought into close contact all over by employing adequate pressure and where thick glue lines can be avoided with certainty. On the other hand a *gap-filling adhesive* is one capable of making a joint with a thick glue-line up to 1/20 in. thick, so that the component parts of the joint need not necessarily be in close contact all over. In fact, when a cut has been made with a fine-tooth saw, there is no need to plane the surface before gluing up, though it makes a better job to do so.

There are three main methods of building a wooden hull. These are :—

(*a*) The bread-and-butter method, used either on the waterlines or the buttocks.

(*b*) The rib-and-plank method, as used for full-sized wooden vessels.

(*c*) The multi-skin method with two, three or more skins.

In (*a*) partially-shaped planks are glued one on top of another and the hull carved to shape. This is one form of laminated construction for model hulls.

In (*b*) the only difference between full-sized practice and model construction is that the strakes are glued edge to edge instead of being caulked.

In (*c*) the earliest form was ordinary double-skin diagonal planking, but triple skins were sometimes used, either method giving a very strong and watertight hull. This was, of course, used for full-sized craft, such as lifeboats. Laminated glued construction is now extensively used for stock boats like dinghies and small sailing yachts, particularly mass-production jobs. Wartime examples were the dinghies carried on M.T.B.'s and similar vessels and the rescue lifeboats that used to be dropped from aeroplanes. These boats were built of several skins of veneers, bonded with resin glues, and were very successful. Model yachts can be built on a former by this method with skins composed of veneers, provided the right adhesives are used ; and very strong, light hulls are turned out by this means.

There are only two kinds of glue that are at all suitable for model building—casein glues and synthetic resin glues. Of these the casein glues were in use before the war, but the synthetic resin glues are a later development.

At one time casein glues were supposed to be waterproof, but actually they are only water-resistant to a very limited extent. When a joint made with casein is subjected to water for the first time, its wet/dry adhesion ratio drops to about 20 per cent. In other words, when it becomes thoroughly saturated, the strength of the glue joint drops to about a fifth of its original strength. On drying out again, the joint recovers about 90 per cent. of its original strength. The process is repeated each time the joint is immersed, and with each immersion the joint becomes weaker. Also some of the glue disappears at each immersion. Thus it is not long before a joint made with a casein glue disintegrates and the whole assembly resolves itself into its original component parts. This may seem rather a gloomy picture but actually, provided the joints are properly made and hulls kept well painted or varnished, hulls built with casein glue will give excellent service for model yachts, steamers, etc. On the other hand casein glues have many advantages. They are an extremely strong adhesive and provided joints are protected, they do not lose their strength. If the glues are kept in an airtight tin, they have an everlasting shelf life. When mixed they have eight or ten hours pot life, and their assembly time, both open and closed, is more than sufficient to make the finest adjustment possible. The clamping time for casein glues is at least twelve, and preferably twenty-four hours. Casein glue is a close-contact adhesive, and glue-lines made with it should be hairline. The best results are obtained when clamping is done under a strong, even pressure.

There are a number of different makes of casein glues and the main difference between them is in purity and above all in the fineness of the grains of glue powder. " Casco " can be mentioned as one of the better brands.

Casein glues are a fine white powder, which is mixed with water into a paste. The finer the powder, the smoother the paste.

Casein glue must be mixed 20 or 30 minutes before it is required, and since, as was mentioned above its pot life is about eight hours, only sufficient for the job in hand should be mixed. Any glue left over must be thrown away and must not be mixed with fresh the next day as it will have no adhesive quality. On the other hand, sufficient for the job must be made up, as it is most undesirable to be forced to stop in the middle of a job to mix more glue. To mix the glue, add to a little water sufficient glue for the day's work. Stir in very thoroughly until you have a smooth paste of the consistency of cream. Stand aside for at least 20 minutes, when a chemical change in the nature of the glue will be observed. The first time you use this type of glue, wait a little longer before using until you are sure the change is complete. Afterwards you will be able to recognise it at a glance. Coat both surfaces to be joined and bring them together. You can take your time in lining up as this glue gives plenty of assembly time. Then put the joint under as much pressure as practicable to ensure the whole surface making contact and get a thin glue-line. The joint should be left under pressure for twelve hours or more.

Methods of cramping and the making of a special cramp for bread-and-butter hulls will be dealt with next month, also resin glues and their uses will be discussed at length.

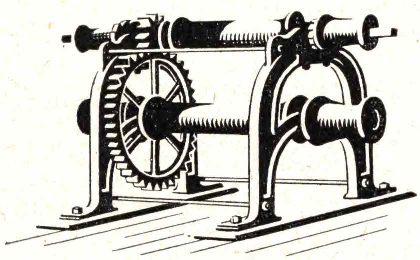
(To be continued)

The Shipmodeller's Scrapbook

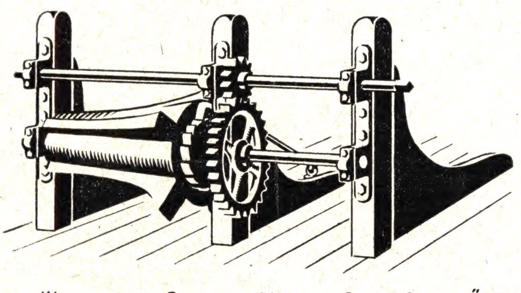
THE WINCH AND WINDLASS

OUR first drawing shows the dolly winch, which was used on all types of sailing ships from the last decades of the nineteenth century until they disappeared from the seas. The pinion on the upper shaft was made to slide on a key in the shaft so that it would engage with the large wheel on the lower shaft, or rotate idly alongside it. In this way two speeds were obtained. With the pinion out of engagement the upper drums were used, being operated directly by the crank handles which were fitted to the squares at each end of the shaft. With the pinion in gear the lower drums were used, giving greatly increased power owing to the shaft being geared down in the ratio of about 5 or 6 to 1. The ratchets on the upper shaft had their teeth arranged in opposite ways so that the shaft could be locked whether rotating in one direction or the other. The sketch was drawn from the winch on the trading ketch *New Design* at present lying in Bristol Docks.

**Continued from June issue, page 72.*



WINCH – KETCH "NEW DESIGN"

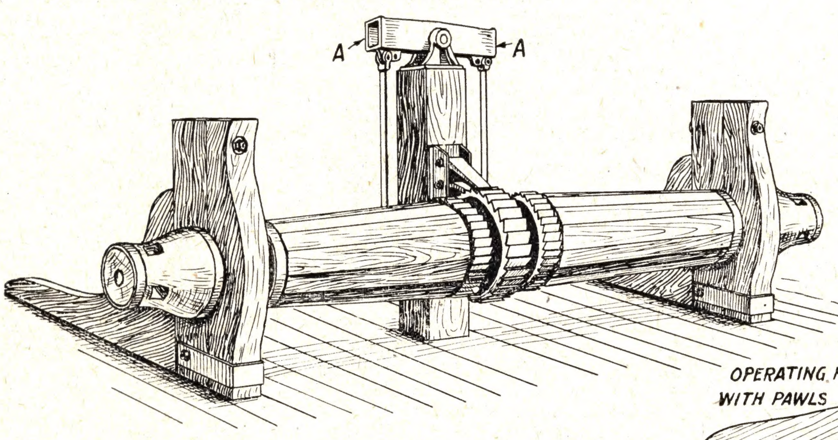


WINDLASS – BRISTOL CHANNEL PILOT CUTTER "PET"

The second drawing shows a rather unusual type of windlass which was seen on the Bristol Channel pilot cutter *Pet* which was built about 50 years ago. Its special feature is the conical drum with its tapering whelps. This enables one to obtain a pull of varying power from the same effort at the crank handles. For instance when extricating an anchor from a very firm hold or in deep water with a great length of chain out, the pull would be taken at the small end of the drum and as the chain comes in and the weight is lessened the chain coils into the large diameter of the drum. As the windlass is a fixture in the bows of the ship, and always rotates in one direction when under load, only one ratchet wheel is necessary.

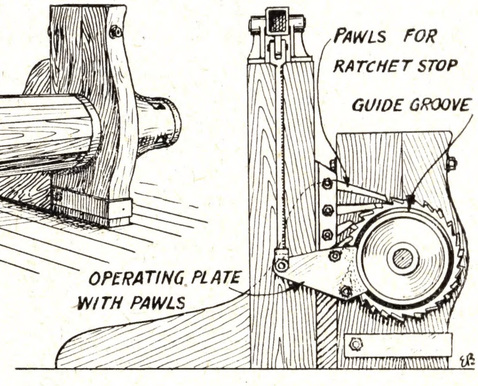
The third drawing shows the old "up and down" type windlass which was used in deep sea sailing ships up to the 1870s and in coastal craft up to the early years of this century. The example shown was seen on a derelict trow *Norah* which lay for years on the mud at Uphill near Weston-super-Mare. For light loads the drum could be rotated by handspikes inserted in holes in the drums at each end of the shaft.

(*Continued on page* 215)



OLD TYPE WINDLASS.

A A – SOCKETS FOR "UP & DOWN" HANDLES.



SECTION SHOWING OPERATION.

PADDLE STEAMERS

"Lady Moyra" and "Lady Evelyn"

In view of the interest aroused by the enquiry in our November issue about these two vessels we wrote to their late owners, Messrs. P. & A. Campbell Ltd. of Bristol, who kindly sent us the photographs which we reproduce herewith. In their covering letter they state that both ships were lost at the Dunkirk evacuation in 1940. We mention this in view of the remarks in Mr. Kenneth William's, letter. The information supplied by Mr. Kenneth William's, of Hove, Sussex, was so complete that we publish his letter in full.

DEAR SIR :

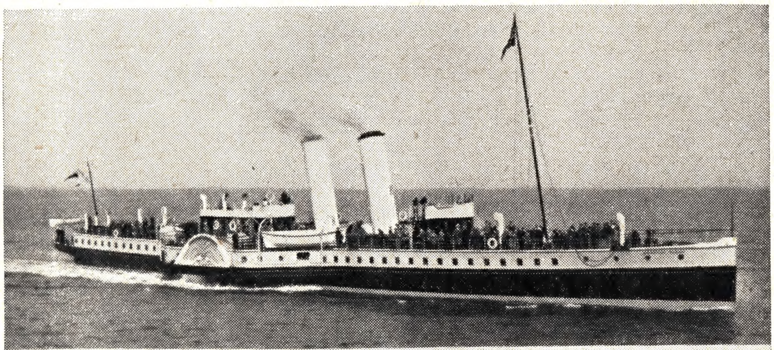
With reference to the letter from Mr. A. T. Wainwright of Stalybridge, published under the above heading in your November issue, I happen to have been well acquainted with the paddle steamers *Lady Moira* (subsequently *Brighton Queen*) and *Lady Evelyn* (subsequently *Brighton Belle*). To the best of my knowledge and belief the following is true history of both these vessels :

The *Lady Moira* (actually spelt *Lady Moyra*) was built as the *Gwalia* by John Brown of Clydebank in 1905 for the Red Funnel Fleet of the Barry Railway Company, then running excursions between the Bristol Channel seaside resorts in fierce competition with the White Funnel Fleet of P. & A. Campbell Ltd. In 1910 she was purchased by the Furness Railway Company, renamed *Lady Moyra*, and, as stated by your correspondent, plied between Barrow-in-Furness and Fleetwood.

In 1919 she returned to the Bristol Channel, this time with Tucker's Yellow Funnel Fleet. This line ceased activities in 1922 and the *Lady Moyra* passed into the ownership of her old rivals P. & A. Campbell Ltd., which has since then been the only company operating excursion steamers in the Bristol Channel. She plied mainly between Bristol, Swansea, and Ilfracombe until 1932. In 1933 she was renamed *Brighton Queen* and, with the coat of arms of Brighton modelled in relief on her paddle boxes, she was used by Campbells on full-day coastal and continental trips from Brighton, Eastbourne and Hastings, until the outbreak of war in 1939.

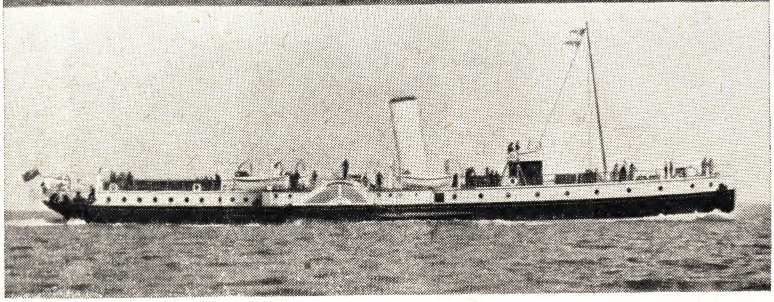
So far as I am concerned there is still some mystery about the ultimate war-time fate of the *Brighton Queen.* Like most of her kind, she was taken over by the Admiralty as a paddle minesweeper. Immediately after the evacuation from Dunkirk one London newspaper contained an account of how, with 2,000 troops on board, she was set upon in mid-channel by about a dozen dive bombers, and, after fighting back with her one Lewis gun and shooting down one bomber, she received a direct hit near the stern and sank, most of the troops and crew being picked up by a nearby destroyer.

In the Official Report on the Dunkirk Evacuation, published by the Admiralty in the *London Gazette* in July 1947, however, the *Brighton Queen's* sister ship the *Devonia*, not mentioned in previous reports, is recorded as having been sunk and the *Brighton Queen* as having been used at the evacuation and having survived without damage. In June 1948 a Brighton local evening newspaper published a paragraph to the



P.S. "Brighton Queen," ex "Lady Moyra," ex "Gwalia."

Photographs by courtesy of Messrs. P. & A. Campbell Ltd., Bristol



P.S. "Brighton Belle," ex "Lady Evelyn"

effect that a Brighton man, then serving with the allied occupation forces, had discovered the *Brighton Queen* still afloat and running on the River Weser in Germany. According to him she had apparently been captured and repaired by the enemy. No doubt this could have been substantiated, but unfortunately, I did not have the time available to follow up the question then.

The *Lady Evelyn* was built for the Furness Railway Company by J. Scott & Co., of Kinghorn, Fife, in 1900. In 1919 she also was purchased by Tucker's Bristol Channel Yellow Funnel Fleet, and in 1922 by P. & A. Campbell Ltd. for thei White Funnel Fleet. She was renamed *Brighton Belle* and ran from Brighton and the other Sussex coast resorts on short half-day trips until 1936. In 1937 she was refitted and modernised, and then plied in the Bristol Channel until September, 1939.

As a paddle minesweeper the *Brighton Belle* was also at Dunkirk. Unfortunately when leaving there on her first trip with evacuated troops she struck a submerged wreck and began to sink. After all the troops had been taken off by another *ex*-pleasure steamer, the *Medway Queen*, she was beached, but became a total loss.

I have many happy boyhood memories of the graceful two-funnelled *Queen* and the little single-funnelled *Belle* when they ran from Brighton. I made some small models of these and the other Brighton steamers *Glen Gower* and *Waverley* before the war and did a certain amount of research into their history.

Yours faithfully,

Hove, Sussex. A. KENNETH WILLIAMS.

Mr. David F. Helps of Bristol in a somewhat similar letter supplies the following additional information :

The dimensions of *Lady Evelyn* were : length 200 ft., beam 24 ft. and depth 82 ft. Those of *Lady Moyra* were : length 245 ft., beam 29 ft. and depth 97 ft. *Lady Moyra* was fitted with radio in later years. *Lady Evelyn* was a single funnelled steamer, plated right up to the bows. Her paddle boxes had narrow slots, concentric with her paddle wheels and not the more usual radial slots.

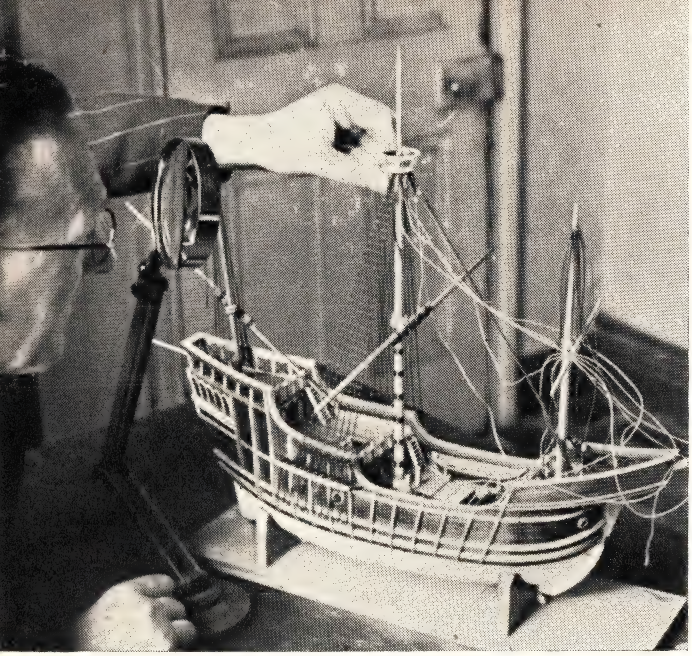
We have also received a letter from Mr. A. D. Trollope of Ruislip, Mr. C. G. Stafford of Cardiff, Mr. A. S. Miller of Bristol and Mr. Peter Dykes of Salford and wish to express our grateful thanks to these gentlemen for the trouble they have taken—(Editor.)

FOR THE BOOKSHELF

MERCHANT STEAMERS AND MOTOR SHIPS
Part II. Descriptive Catalogue. 3*s.* 6*d. net.*
OUTLINE HISTORY OF TRANSATLANTIC STEAM NAVIGATION.
H.M. Stationery Office, London, 2s. net.

These two books are recent additions to the series of publications produced by the Science Museum, South Kensington, and have been prepared by Mr. H. P. Spratt, B.Sc., A.S.M.E. who is responsible for the section of the museum which deals with power driven ships. The first is the detailed catalogue of all the exhibits in this section, which includes drawings, paintings, and models of the various ships. The exhibits are classified under the following headings : Ocean-going Passenger Vessels, Ocean-going Cargo Vessels, Oil Tank Vessels for the Narrow Seas, Vessels for Inland Waters, Power Yachts, Vessels for special purposes, and Experimental ship design. Each section is introduced by a foreword describing the evolution of the type from the early paddle steamer to the latest turbine or motor ship. These constitute a very comprehensive history of the development of the power driven vessel in all its various forms, and as such will be found of great interest and value to the ship modeller. Another point is that from the study of the catalogue the ship modeller will form an appreciation of the wealth of material that is available in the museum to the student of ship design. The Londoner is more fortunate than he realises in having these things on his doorstep, but the provincial student or modeller will make more of his visit to the museum if he learns beforehand what there is for him to see. A useful bibliography of the subject is included at the end of the book and most of the books referred to may be seen in the museum library. Many of the exhibits have been photographed, and prints are available, the reference number being given with the description in the catalogue. The book is well illustrated, in some cases by pictures of the models, and in other cases by pictures of the ships themselves.

The second book, *The Outline History of Transatlantic Steam Navigation*, is purely historical but as the subject is covered very comprehensively by the exhibits in the museum it is fitting that the museum should have published such a work. The North Atlantic run contributed more than anything else to the development of the ocean-going passenger vessel, and this book traces this development from the tiny early paddle steamer to the latest turbine driven leviathans. It is significant that the oil engine has been very little used in Atlantic liners ; but steam has been so developed that it is still more economical than the oil engine for the huge powers required. Further, now that oil is used as boiler fuel the old objection to the dust and dirt from coal has been overcome. The story of the various ships which were built, one after the other, to win the Blue Riband makes fascinating reading. This book also contains a comprehensive bibliography of the subject, most of the books referred to being available in the museum library. We consider that no ship modeller or serious student of ships can afford to be without these two volumes, especially at the extremely moderate price asked for them. They may be obtained at any of H.M. Stationery Offices in London, Edinburgh, Manchester, Birmingham Cardiff, Bristol or Belfast, or may be ordered through any bookseller.



★ A Model of an EARLY XVI CENTURY SPANISH CARRACK

by

A. E. Field

Mem. Soc. Naut. Res.

GRATINGS. SEE FIG. 7

I STRONGLY advise ship modellers who possess a lathe to make up a small circular saw which will be found extremely useful for a variety of purposes including the simple and accurate manufacture of miniature gratings. The table of my own saw was simply made from $\frac{3}{8}$ in. plywood and when required is mounted on the cross-slide of the lathe—the compound slide-rest being removed for this purpose. The saw is actually a metal " slitting " saw about 3 in. diameter. These are obtainable in numerous thicknesses and I have accumulated several for various purposes. Gratings are usually made of $1\frac{1}{2}$ in. or 2 in. square timber. For scale 1 = 60 I therefore used a saw 1/32 in. thick for making the gratings. The simple spindle was made with a shoulder to support the blade and with washer, nut and lock-nut to secure it. In use the blade is threaded through the stop in the table, one end of the spindle being held in the three-jaw chuck and the other end supported by a centre in the tailstock.

The height of the saw above the table is adjusted by packings between the cross-slide and bottom of the table. Before commencing work on the actual gratings I made up a simple jig which consisted of a piece of scrap plywood across which I cut a 1/32 in. groove $\frac{1}{16}$ in. deep by running it over the revolving saw blade. A length of $\frac{1}{8}$ in. × 1/32 in. brass strip was fitted in this slot which then projected $\frac{1}{16}$ in. above the face of the plywood. I then cut a slot with the fretsaw 1/32 in. away from the brass strip but parallel with it, to accommodate the circular saw blade. The jig was then clamped to the top of the saw table and the whole adjusted until the blade projected through the slot $\frac{1}{8}$ in. We can now revert to the actual making!

I planed up a small block of boxwood true and square until its width was the exact length of the required grating *less* the surround and the thickness of the block was $\frac{1}{16}$ in. less than the width of the grating. To make this clearer let us suppose that we want to make a grating 1 in. by $\frac{1}{3}$ in. inclusive of the mitred surround. The boxwood block would have to be planed until its end measured 27/32 in. wide × 9/32 in. thick.

With the lathe running at its maximum speed and the block held firmly against the brass strip I slid the end of the block over the saw blade which cut a 1/32 in. groove $\frac{1}{8}$ in. deep at right angles across

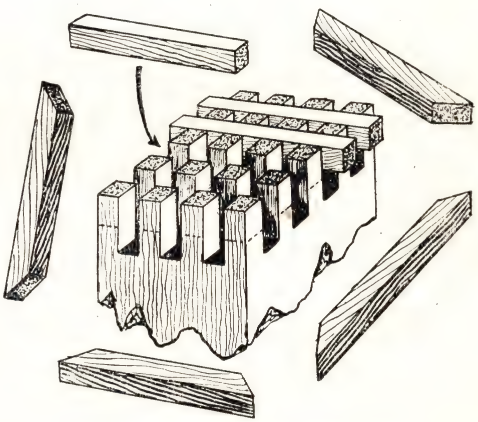


Fig. 7. Method of making gratings

the end face of the block 1/32 in. from one side. This groove was now slid over the brass strip and the block again passed over the saw. The operation was repeated, using the last slot cut in conjunction with the brass strip to cut the next slot. The block was then turned at right angles and the operation repeated until I had slots cut along and across the end grain.

A piece of $\frac{1}{16}$ in. × 1/32 in. boxwood stringing was then rubbed down with sandpaper until it was an *easy* fit in the slots. This is most important as I found

* *Continued from December issue, page* 188.

that if the stringing is even a shade too tight, the subsequent gluing operation tends to swell the stringing slightly and the stress is such that the grating will rapidly fall to pieces when the glue has dried.

The stringing was now cut into lengths $\frac{1}{16}$ in. longer than the width of the grating—less surround. (If we were cutting pieces for the grating mentioned above they would have to be 11/32 in. long.) These were smeared on both sides with Seccotine and placed in the slots, being carefully adjusted till they were flush with the top of the slots and projecting 1/32 in. on either side of the block. A simple mitred surround of satin-walnut 5/64 in. wide was then made and glued round the grating. When thoroughly dry the grating was carefully rubbed down on a piece of fine glasspaper laid on a flat surface. Note—the grating was rubbed to and fro in a direction *across* the boxwood stringing strips and *not* in line with them as this would probably have broken off the small square pegs of the block. The grating was then carefully cut off the block for which purpose I used the fretsaw.

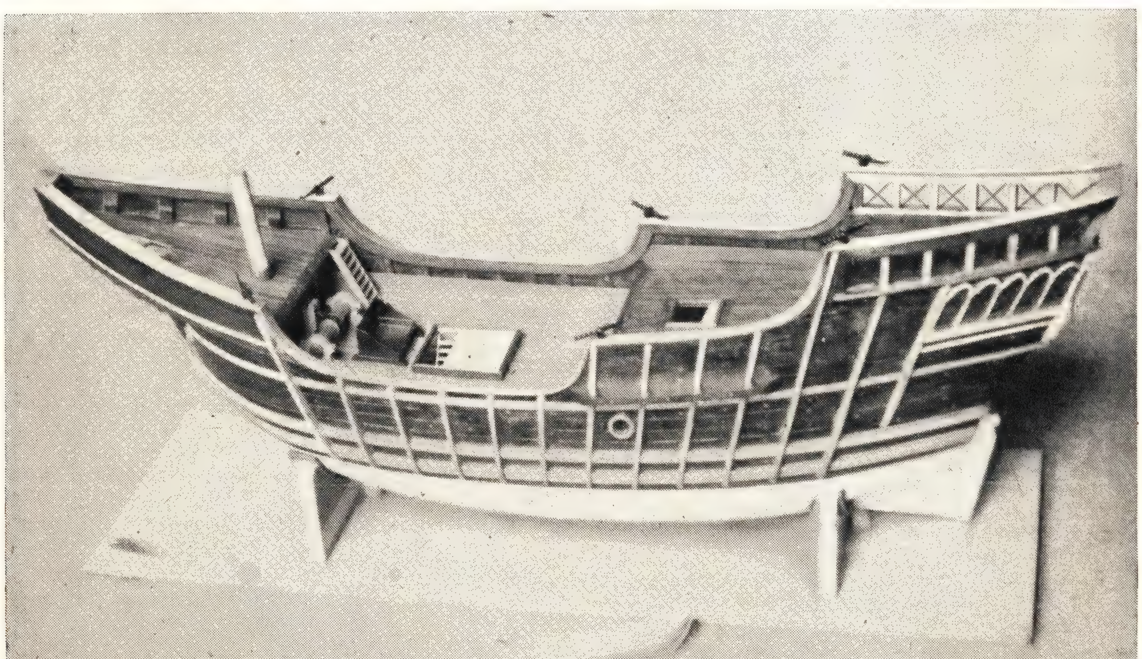
For those not possessing a circular saw this type of grating can be made by planing up the block in the manner described above. Then clamp a piece of sheet brass (or wood, for that matter) at one end to project above the end grain. Then place a piece of 1/32 in. brass hard against this to act as a guide for the saw. This should preferably be one of the jewellers' brass-backed handsaws obtainable in one or two sizes. Obtain one with a blade about 1/32 in. thick. Cut the first groove, then place a 1/32 in. strip of brass in the groove with another piece resting on top of the block but hard against it to act as a distance piece for cutting the next groove. By this method it is possible to cut accurately and evenly spaced slots. The grating is then completed as described above.

THE WINDLASS

The barrel was turned from boxwood and the ratchet cut out with a small chisel. The flutes were cut with a small hand milling attachment which I made up specially for such work and which is mounted on the cross-slide of the lathe. A suitable change-wheel mounted on the mandrel does duty for a dividing head! The barrel supports were cut with a fretsaw from $\frac{1}{8}$ in. boxwood. The samson post was made from $\frac{3}{16}$ in. square boxwood, in which a slot was cut to house the pawl, which was filed up from a piece of brass and drilled for the hingepin. The ratchet and pawl were painted black to represent iron, and the remainder left natural colour and french polished.

ANCHORS

The shanks and flukes were filed up from square section brass rod and the palms cut out of thin brass sheet. The flukes were soft-soldered to the shanks at the appropriate angle after which the palms were soldered to the flukes. A piece of thin wire was soldered round the shank of each anchor to form the stop for the stock. The rings for the cable were easily made by winding brass wire of suitable thickness round the shank of a twist drill. Rings so



Bird's-eye view of finished hull

made were cut off with pointed wire cutters and threaded through the holes in the anchor shanks. The rings were then gently squeezed to close the gap, soldered and the joint trimmed up with a small file. The anchors were painted with Berlin black (used for painting the insides of cameras) before fitting the stocks.

The stocks were each made in two halves from boxwood and riveted together with brass wire for rivets. At a later period bands were used for holding the two halves of an anchor stock together, but there is no evidence that they were in use in the XVI century.

After fitting the stocks the rings were " served " with suitable sized " rope " to reduce chafing of the anchor cable.

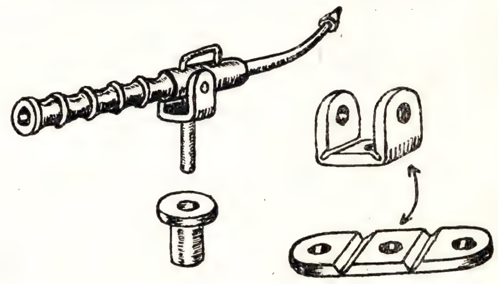
GALLEY

This is in the form of an open hearth and was made in four pieces from brass. The back, two sides and front were cut out in one piece from thin sheet brass and bent at each corner. The bottom was simply a rectangle of the same sheet brass. The two supports or " feet " were filed up from $\frac{1}{8}$ in. square brass rod. The piece forming the back, sides and front was soldered to the base which was drilled through near each corner. Holes to correspond were drilled through the supports, and after painting with Berlin black, pins were driven through the holes in the bottom, through the supports and into the deck, thus holding the galley and support together and fixing the assembly securely to the deck.

SWIVEL GUNS AND CANNON. (See Fig. 8.)

The barrels were turned from brass rod, holes being drilled in the top for the shaped handles and, in the case of the swivel guns, a hole drilled through from side to side for the trunnion. The swivelling supports were easily made up from brass strip and a small piece of brass wire. Triangular grooves were filed in the strip at the places at which it was to be bent and the holes for the trunnion and pillar drilled in the correct places. The ends were rounded with a file and a little solder paste (Britinol or Rawlplug 50/50 or Tryolux Solder Paint are excellent) put in each triangular notch and in the hole for the pillar in the strip. A small quantity of solder paste was also placed in the two holes for the wire handle and the hole for the trunnion in the gun barrels. The ends of the strip were then bent up at right angles, the wire for the pillar inserted in its hole, the handle bent to shape from thin wire and inserted in the two holes at the top of the barrel and finally the brass wire for the trunnion threaded through the bent up sides of the strip and the barrel. The lot was soldered at one go by holding the assembly in a small gas flame. A small spirit lamp or blow pipe would be equally suitable for this purpose. The assembly was then cleaned with a brass scratch brush, the handle at the end of the gun barrel bent upwards slightly and painted with Berlin black. I turned up small brass bushes which were inserted in the rails to support the swivel guns.

The cannon was not fitted with trunnions, being lashed to a wooden " carriage " which was not fitted with trucks or wheels. This cannon was secured to the deck and bulwarks with ropes, ringbolts being fitted on both port and starboard sides so that it could be used on either side of the ship. It is placed on the maindeck under the half-deck.



SWIVEL GUN WITH BUSH FOR CAPRAIL ALSO METHOD USED FOR MAKING SUPPORT.

Fig. 8

STERN LANTERN

The body was made from a piece of hexagonal brass rod through which I drilled a hole in the lathe. This hole was then filed out hexagon shape so that in effect I had a tube of hexagon section. The " windows " were drilled and then carefully filed to shape on each of the six sides. The top and bottom of the lamp were simple turning jobs and small holes were drilled through both near the angles of the hexagon. A hexagonal hole was made in the bottom to correspond with the hole through the body. Two thin pieces of fuse wire were bound round the body at appropriate places to divide the " windows " into the three parts. The wire was touched with solder paste at the points of contact, and the joint faces of the top, body and bottom similarly treated and fitted together, taking care that the six holes near the angles of the hexagon in top and bottom were in line. The assembly was then held in a flame and soldered at one go. The lantern was then scratchbrushed and painted with Berlin black before inserting the " glass."

The glass was made by filing up and polishing a scrap piece of perspex to a hexagon shape. This was left slightly oversize at the bottom and was then pushed into the lamp from the bottom, the oversize piece being a tight fit. The surplus was cut off and the end painted black. The six vertical rods were made from entomological pins bent at the bottom round a simple jig to ensure uniformity. They were then threaded through their respective holes in the base and top, the points projecting above the top being quite decorative. A small turned collar was threaded over the six pins where they were bent together at the bottom. The pins were purposely made a tight fit in the holes to obviate soldering which would of course have damaged the perspex. The pins and collar were then painted black which finished the lantern.

(*To be continued*)

MODEL POWER BOAT TOPICS

by Edgar T. Westbury

THE articles which I have contributed to MODEL SHIPS AND POWER BOATS each month since the introduction of this journal have been submitted with the primary intention of assisting the inexperienced beginner over the obstacles which he must inevitably encounter when attempting to build model power boats. In the first series of articles, dealing with the history of these boats, my aim was to put before readers the shining example of those pioneers to whom we owe the evolution of the present-day efficient engines and hulls; it is my belief that example is often much better than precept, and the beginner who bewails the lack of information on various details of design might do worse than emulate the efforts of those who had to build boats on literally no information whatever. The substance of these articles, it may be remarked by the way, is now available in book form, and apart from its purely historical interest, it demonstrates the somewhat unfashionable but none the less worthy principle of self-help.

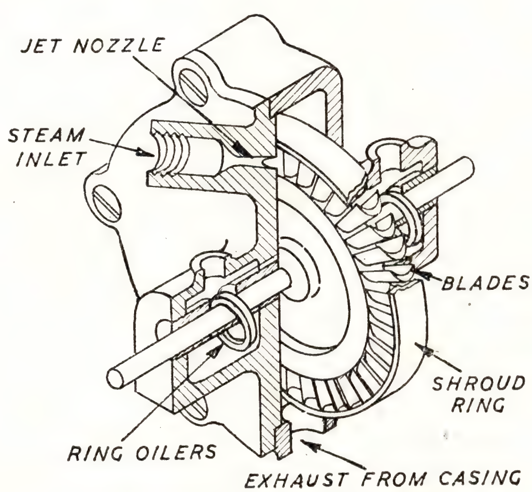
In the second series of articles, I attempted to provide readers with an introduction to the theory and practice of model hydroplane hull design, dealing with working principles rather than details, so that the beginner, rather than producing stereotyped copies of successful boats, might be encouraged to build progressively on past experience and design these boats for himself. The third series of articles, which concluded last month, dealt broadly with all the forms of power plants practicable for model boats, with special emphasis on the more popular and efficient types of engines, but again leaving scope for the reader to work out details for himself. In each case, the series has consisted of twelve articles, running from January to December issues of MODEL SHIPS AND POWER BOATS.

Whether my policy in the treatment of these subjects has been right or otherwise, it is for readers to judge; but I have at least obtained a good deal of evidence that the articles have been followed with interest, not only by many novices, but also by experienced workers, and that they have assisted constructors in many ways. There is no lack of subjects which might be dealt with in further serial articles on similar lines to the above, but it is felt that some change of procedure may be desirable, in order to deal with sundry and various aspects of model marine engineering as and when they arise, instead of keeping rigidly to one department or subject over a given period. The Editor has, therefore, given me a kind of roving commission to submit odd and possibly disconnected items of information on anything relevant to model power boats, or of interest to their devotees, under the heading of "Model Power Boat Topics."

There is at present a very insistent clamour for more information on these subjects, but apart from the fact that in the necessarily limited space of this journal, there are many and varied interests to be served, it is by no means easy to obtain really sound and informative articles on power boats. The construction and development of these boats, particularly the high performance types, is such a hectic and time-absorbing occupation that their devotees rarely have time to sit down and write articles, or even make presentable drawings, for the benefit of others who may be interested. That is one reason why this particular branch of model work has never received the literary representation it deserves. Those interested in other branches of model engineering are often prone to the fallacious belief that model power boat constructors represent but a small proportion of the fraternity, but a visit to either a popular regatta, or at most any model exhibition, would quickly disillusion them.

I am prepared to do what I can to remedy this deficiency in model power boat information, but I would like to make it clear that there are many other subjects which demand my attention, and I certainly do not claim to be an omniscient oracle on this particular technique. But I do claim to be a whole-hearted enthusiast ; and at practically every regatta, or similar gathering of the clans, providing it is within convenient reach, you will find me wandering hither and thither like a dog at a fair, picking up scraps of information and discussing matters of interest with my innumerable friends. In the circumstances, all I can say is that if I don't know *something* about model power boats—not to mention the people who build them—it is jolly well time I did !

Readers are invited to write to me on any subjects connected with power boats, and to consult me on



A simple impulse turbine of the de Laval type

their individual problems ; while I do not guarantee, to be able to solve every problem submitted to me, I can, at the very least, help by giving general advice or putting the matter up for discussion. The paragraphs below are based on matters which arise out of recent queries from readers.

POSSIBILITIES OF MODEL STEAM TURBINES

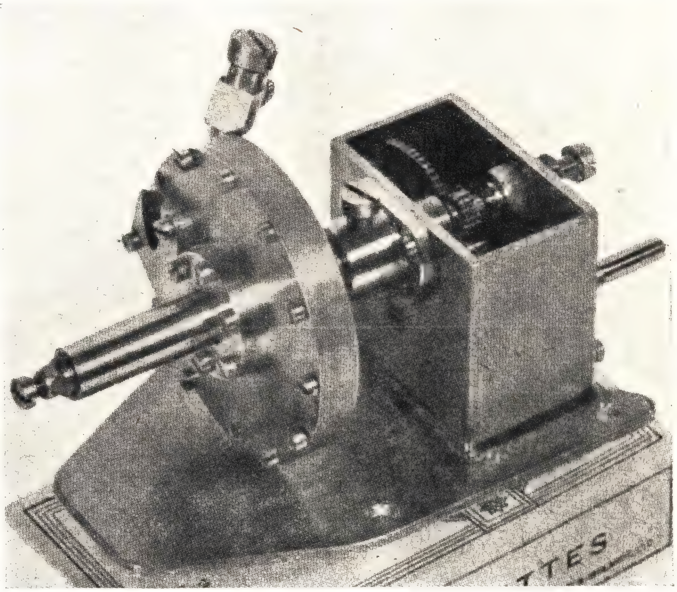
A reader asks what progress, if any, has been made during recent years in the development of model steam turbines for marine work, and suggests that a design should be published for a simple turbine plant, which he considers should be capable of being constructed with less elaborate equipment than that required for building a reciprocating engine.

So far as general principles of design are concerned, it would be difficult to point to any definite improvements or developments since the small turbine first attracted the attention of model engineers ; but some very useful detail work has been done by one or two experimenters within the last few years, which have definitely improved the prospects of being able to produce really efficient turbines on a small scale. It is a great pity that so few model engineers can be induced to take a practical interest in developing the turbine ; I feel sure that rapid progress could be made if people would only get down to some serious experimental work.

Many years ago, when the steam turbine was making its debut in full-size practice, many engineers took a great interest in turbine research, and following the publication of several designs in *The Model Engineer*, the subject was dealt with in a very practical way in one of the popular " M.E." handbooks. It is a great pity that this book is no longer available, but unfortunately interest in the subject declined, and has only been sporadically revived by a few keen enthusiasts at various times since. One of the most successful early experimenters was the Rev. Bredin Naylor, whose designs evolved some 40 years ago are by no means obsolete at the present day, and would form a good solid basis for further research.

One or two attempts have been made to produce small turbines for model boats commercially, but in getting down to a marketable price, the details which are essential to efficiency have been crowded out, and in most cases the result has been little better than a mere toy. A loyal adherent to the cause over many years, has been Mr. T. Geary, whose turbine models, some of which were highly elaborate and incorporated all kinds of auxiliary plant, have featured in many exhibitions. Mr. W. H. Elkin has done much development of blade design, and succeeded in obtaining a very high power from a tiny impulse wheel ; this theme has been followed by Mr. D. H. Chaddock, in a very interesting flash steam turbine plant with which he has experimented for the past two or three years.

I do not altogether endorse my correspondent's suggestion that a turbine is much simpler to build than a reciprocating engine, if it is intended to compete with the latter on anything like equal terms. Like so many things that look simple, appearances are very deceptive, and though it is quite easy to build a turbine of sorts from tin cans and clock wheels, which will whizz merrily if you give it enough steam, the physical problems in both design and construction of a really efficient turbine are perhaps greater than those in any other type of engine. I recently visited one of the largest turbine factories in the country, and learned a few things about the headaches encountered in full-size turbine design ; and though some of these are likely to diminish in proportion to turbine size, there are others in which inverse ratio rules would apply.

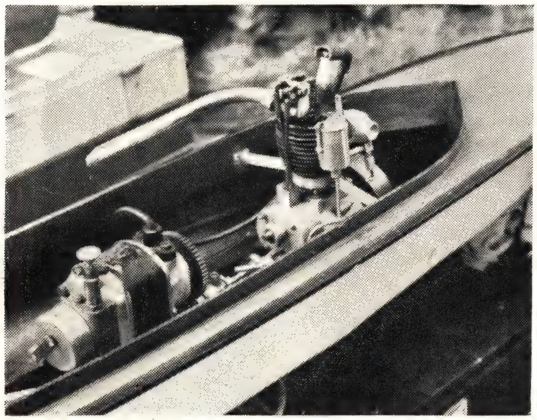


A highly efficient miniature turbine and reduction gear by Mr. W. H. Elkin

Practically the only type of turbine which has been made successfully in small size is the simple impulse type, which can be reasonably efficient if well designed and run at high enough speed ; but there is scope for useful progress in the development of compounding and condensing, not to mention the design of efficient reduction gearing. The subject is undoubtedly a very fascinating one, and I shall be pleased to return to it if a general interest is evinced by readers.

IGNITION IN PETROL-DRIVEN PROTOTYPE BOATS

Several readers have enquired where it is possible to obtain really efficient ignition equipment, of a type suitable for large or moderate-sized engines used in cruising boats. It is suggested—and I entirely agree—that one of the most prolific causes of failure or unreliability in such engines is the inadequate spark obtainable from the lightweight ignition equipment commonly used, and in view of the fact that neither weight or space need be unduly restricted in these boats, larger apparatus, with a more comfortable margin of performance, might be installed.



The engine and magneto (motor-cycle type) fitted to one of the Tyneside boats

This is undoubtedly true, and I have often urged that more attention might be paid to this matter by the makers of equipment, but unfortunately nobody has considered it worth while to cater for this particular market. The coils and batteries which were available before the war, and which gave excellent results, are no longer available.

Although it is often possible to adapt a magneto armature for use as a very efficient ignition coil, it calls for an adequate current supply and generally speaking, the battery is the weak link in the ignition system. Some of the better quality lightweight coils will give quite reliable results if fed with sufficient current, but as I have pointed out in previous articles, the common practice of using dry batteries even fairly large ones, is not 100 per cent. successful, owing to the inherent limitations of these batteries ; that is, their high internal resistance, and the tendency for voltage to drop as the discharge rate is increased.

Many users of large prototype boats have reverted to the use of full-size automobile ignition coils, with proportionately oversize batteries, which certainly solve the problem effectively, but the methods are hardly applicable to medium sized boats. The use of full-size motor-cycle magnetos is by no means unknown in model boats, and the smaller sizes of these magnetos are a good deal lighter and more compact than the smallest automobile coil ignition unit. Such a magneto has been successfully used for years in Mr. R. O. Porter's *Slickery*, and another example was seen at the Grand Regatta in a cruiser entered by a member of a North Country club.

I am a great believer in the superiority of a good magneto over the best battery and coil system, and my own magnetos, which have been fully described in *The Model Engineer*, have proved entirely reliable on all classes of boat engines. During the past year, at least three members of the Coventry S.M.E. have built magnetos to my design with complete success. Similar magnetos, at least in principle and general design, are available commercially, and I know that they have given excellent results in many speed and prototype boats, but I have not yet had an opportunity of making a personal test of the latest types of these magnetos.

(*To be continued*)

★ ★ ★ ★ ★ ★

The Shipmodeller's Scrapbook (*Continued from page* 7)

For heavier loads wood bars were inserted in the cast-iron socket which is carried in trunnions on top of the samson-post. This is connected by links to the operating plates which engage in guide grooves in the ratchet wheels on the drum. There were two ratchet wheels and guide plates one on each side of the central ratchet wheel. Each plate carries two pawls which rotate the drum on the upward stroke and freewheel on the downward stroke. Thus the drum is driven by first one and then the other ratchet wheel on each up and down stroke of the levers. A heavy ratchet wheel between the two driving ratchets engages with pawls carried in a bracket in the aft side of the samson-post and thus prevents the drum running back between the strokes. There are three pawls and they are so arranged that one is always in engagement.

The example illustrated shows the arrangement used in coastal craft or small vessels. In the larger ships, including the early clippers, a similar windlass was used, but where there was a monkey fo'c'sle or anchor deck, the samson post was extended upward to 2 or 3 ft. above the deck and the socket with its trunnions was placed on top of it. The links to the operating plate were made correspondingly longer. The operating levers were often made of wrought iron and had a socket at their outer ends into which was inserted a wooden handle so that if necessary two or more men could work on each handle.

Notes on Building a Model of the CROOKED STERN JUNK of the Kung T'an Ho

By G. R. G. WORCESTER

IN Fowchow, it is said, that control of the Kung T'an Ho, some 2,000 years ago, was regarded as a very pleasant sinecure for a retired dragon, since there could be no possibility of any junk traffic with which to concern himself because the river was full of dangerous rapids.

However, Lu Pan, the Carpenter god, was so much moved by the boasted lightness of the old dragon's labours that he set to work to design a junk which would be able to operate in the fiercest rapids. He accordingly devised a junk, which by its peculiar formation, was able to employ two sweeps instead of only one, and so negotiate even the dreaded Yangchit'an, or Goat Horn Rapid. This, according to the junkmen, is the origin of the crooked stern junk of the Kung T'an Ho.

The Chinese have shown themselves to be expert boat-builders, for all their craft are eminently suited to the waters in which they are designed to operate. Some times it is difficult to find a reason for a particular method of construction or design but painstaking research will usually give an answer. Nevertheless, there are many vexatious contradictions in the study of everything connected with Chinese junks. Perhaps it is this that makes is so very interesting.

Fowchow is a small town on the Upper Yangtze some 65 miles below Chungking. It is a port of call and stands tier upon tier, on the right bank of the Yangtze, at the head of a broad reach surrounded by steep hills, about 1,000 ft. in height at the confluence of the Kung T'an Ho and the Yangtze. Half the area enclosed by its walls is occupied by public buildings, temples and literary monuments. Despite this the town has a very bad reputation, indeed, even the junks have crooked sterns!

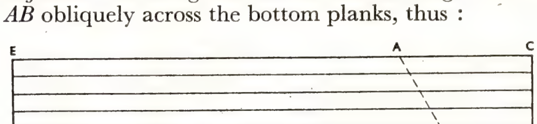
Fowchow is famous for a very peculiar type of junk used only on the Kung T'an Ho. This is the Wai-p'i-ku, or crooked stern junk. Summed up briefly it can be said that it is built as if a giant had held the hull of an ordinary junk in his left hand, and then, grasping the stern with his right hand, had given the stern a 30 deg. twist clockwise.

These craft deserve to be better known and understood, not only because of their curious appearance, but because they negotiate a river said to be one of the most torrential and hazardous ever attempted by junks. And here may be found a bewildering and maddening contradiction. Why is it that the junks on the Ren-hwei-ho, a tributary river, to all intents and purposes a fascimile of the Kung T'an Ho, possess boats of the same dimensions and type in every way—except for the crooked stern?

The Wai-p'i-ku are built either wholly or in part of Hung-ch'un, a wood possessing some of the character of the English elm, although darker in colour. Feng-hsiang, or maple, is also in favour, but the bulkheads are always made of cypress.

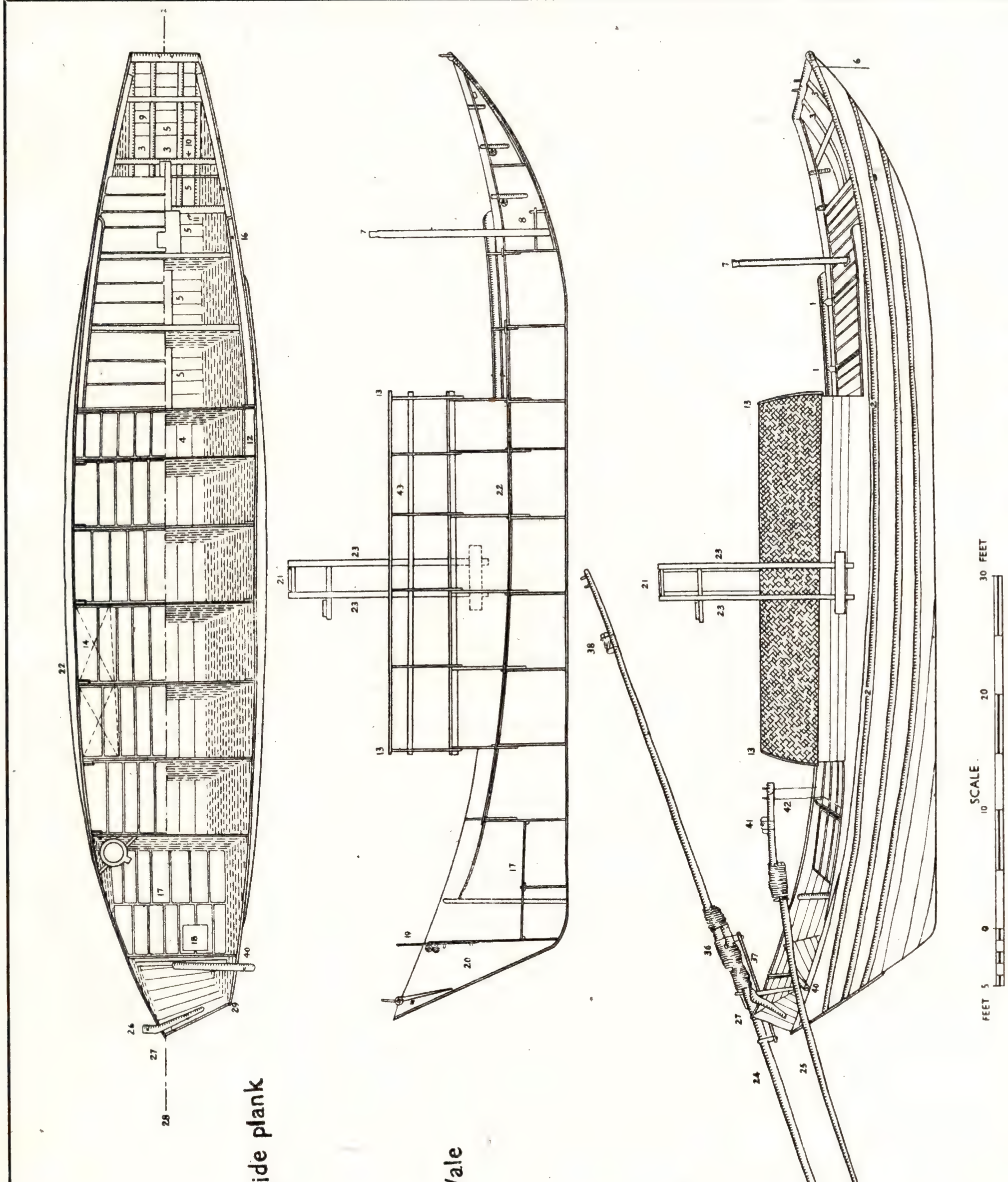
The first process in the building of a crooked stern junk is to lay five or more planks of varying lengths, but rarely exceeding 30 ft., side by side on the ground. These are the bottom planks, to which others are joined by scarfing so as to extend from the stern to as far forward as the first bulkhead, and provide much of the longitudinal strength of the junk. They are secured to each other by long, square clincher nails which are driven in obliquely.

The bottom of the vessel is thus formed, and one end is now hoisted about 5 ft. clear of the ground on to a crutch, the under side receiving a thick coating of mud, while the top is soaked with water. A large fire is kindled beneath the raised end and so adjusted that the greatest heat comes along the line *AB* obliquely across the bottom planks, thus :



Large quantities of stones are placed over the extremity *C D*, and in about two hours the whole area *A B C D* is bent over along the line *A B*. Very often the wood splits, but this is not objected to unless it is likely to permit the entry of water, and the scars of this burning can always be seen in the junks.

(To be continued)



The crooked-stern junk with plan and longitudinal section showing construction

Editor's Correspondence

DEAR SIR :

I would like some information on a point which must have perplexed many model yacht constructors.

How is it possible to obtain the position of the C.E. of a suit of sails to some determinable point on the hull, the C.B. on the C.L.R. ?

All authorities I have consulted on the matter are emphatic in that the final position, so far as a model is concerned, is a matter of trial and error, with which I cannot help but agree. But I have not been able to ascertain with any degree of accuracy how to calculate the position of this very important point.

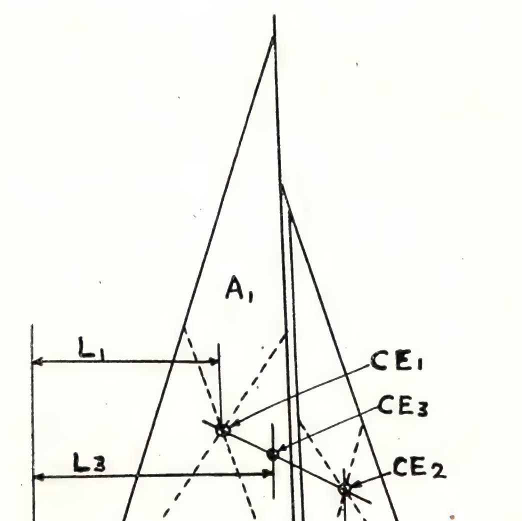
I have completed the design of a new six metre hull and having calculated the position of the C.B. and C.L.R. am now faced with fixing the approximate position of the mast and sail plan.

I would much appreciate some practical assistance on this point.

Yours faithfully,

Leamington Spa. R. O. G. BOOTH.

In reply to your letter the position of the centre of effort of a suit of sails is determined by the method shown on the sketch herewith. The centre of effort of each sail is first found, then by taking moments at any given point on the hull, the position of the resultant centre of effort, due to the various sails, is obtained.



The reason why so much depends on trial and error is that, as the boat heels, the height of the centre of effort above the waterline is reduced, and as the sails are sheeted outward, the centre of effort moves forward. Thus the calculated centre of effort is only a starting point. As the fore and aft position of the centre of effort is the more important, a sliding mast-step is provided so that the mast can be moved until the best position is found. The calculation is of value, of course, as it enables one to determine the nominal position for the mast.

L = *Arm of moment (in.)*
A = *Area of sail (sq. in.)*
CE = *Centre of sail and position of centre of effort*

To find O bisect side of triangle and join to opposite corner. Where two such lines intersect is the centre of sail or CE

To find L_3, take moments about X

moment of $A_1 = L_1 \times CE_1$. *Mainsail*

" " $A_2 = L_2 \times CE_2$. *Jib*

" " $A_3 = L_3 \times CE_3$. *Total*

To find L_3 solve $\dfrac{(L_1 \times A_1) + (L_2 \times A_2)}{A_1 + A_2} = L_3$

Result is L_3 which must lie on a line joining A_1 and A_2.

MODEL SAILING CLIPPERS

DEAR SIR :

I have been reading with great interest Mr. Graham Henley's articles on his fine model of *Thermopylae*, in which he seems to have reached a satisfactory compromise between realistic appearance, and simplicity of gear. The only point on which I should like to join issue is his view that automatic steering gear is unsuitable for a square-rigged model. I quite agree so far as the "Braine" gear is concerned, but the Vane is a different proposition, and I feel it is an indispensable adjunct, for sailing on a pond at any rate.

In open-water sailing one has some latitude in choosing a favourable course on which to start the model, but on an enclosed lake there is but little choice, and this often means squeezing up your ship as close to the wind as she will lie with advantage, in order to keep off a lee shore, and under such conditions an automatic gear (as opposed to a fixed rudder) is essential to keep her going full-and-bye. If the rudder is fixed at a particular angle before the start of the board this may suffice for the average strength of wind, but it will have too great or too little turning effect in the squalls and lulls, with the result that the model will either run off to the lee-side of the pond, or else swing up and aback and lie hove-to indefinitely.

The vital feature of Vane gear is that it will give the correct angle of weather helm or lee helm according to whichever side of the proper course the model

tends to yaw, and a well-balanced vane will operate in all conditions from the lightest of airs to a full gale.

Mr. Henley is wrong in saying that a square-rigged ship cannot gybe—"wear" is probably the more correct term—she can, quite easily. The one manoeuvre a square-rigged model cannot execute is to "stay" round head to wind in the way that a fore-and-aft rigged model yacht will come about on the guy. For this, we shall have to wait until radio-controlled electrically-operated brace winches become a practical proposition!

If my own *Enchantress* goes aback she extricates herself quite quickly, but I am not sure whether this arises from some happy accident in her design, or would take place in other Vane-steered square-riggers. What happens is this: on being taken aback, she slews right round on to the other tack and gathers sternway. Pressure on the vane puts the help a-lee, but as she is going astern the rudder steers her round in a small arc until she lies almost stern on to the wind. At this point the sails fill on the correct tack, and as she gathers headway the vane (which by this time has what is normally its trailing edge point upwind) gybes over as if it were a fore-and-aft sail, and reverses the helm, so that the rudder luffs her up on to her intended course.

I propose to fit vane gear to my next ship, and will then know whether it is a reliable answer to the most difficult problem in sailing working models of this type.

Yours sincerely,
Brighton, 7. MURRAY G. T. BUTCHER.

HYDROPLANE DEVELOPMENT

DEAR SIR:

In reply to your correspondent, Mr. D. C. Jeffrey who states he does not agree with my comments on "Catamarans," I would explain that while the sentence referring to this type of craft in my article is a little ambiguous, I did not wish to imply that "Catamarans" were unseaworthy, but that I had sidetracked them as having no useful effect on the design of hydroplane hulls.

I quite agree with your correspondent that they are not only faster, but better able to contend with rough conditions at high speed on the "line" than the conventional hydroplane; but as I am firmly convinced that model development can and does help in full size hydroplane racing, development in this direction would be of little assistance to me.

It is of considerable interest to note that the American hydroplane, *Slo-Mo-Shun*, which has just broken the world's speed record with a speed of 160.32 m.p.h. and won the Harmsworth trophy later at an average speed of 100.680 for the 40 miles is a three point hydroplane, using the surface propeller system of planing with her transom off the water, a method introduced and perfected by the model racing fraternity. What the Americans call a "flying" three-pointer.

It is also interesting to note that the Allison engine used develops only 1,720 h.p. against the 2,000 h.p. of Bluebird's engine.

I would add that I was most interested in Mr. Jeffrey's letter, and as I am at present engaged in writing a book on the design and development of full size hydroplanes, and in view of the close relationship that exists between model performance and the full size boats, his views are most helpful.

Yours sincerely,
Brockenhurst. HARVEY A. ADAM.

THE FOUDROYANT

DEAR SIR:

Referring to the article "The *Foudroyant*," page 165 of the November issue, it is stated "Lord Nelson used her as his flagship during the years 1799 and 1800 after which he transferred his flag to H.M.S. *Victory*." This statement is liable to misinterpretation, particularly as you kindly credit me with "much of the information."

Actually, Lord Nelson transferred his flag to the *Alexander* in June, 1800, as the *Foudroyant* had been ordered to Minorca for repairs, and on July 13th he struck his flag on board of the *Alexander* after only a fortnight and left by overland route for England. Six months later he hoisted his flag in the *San Josef*, transferred it to the *St. George* February 1st, 1801, and at Copenhagen at the end of March again transferred, this time to the *Elephant*. Other ships wore his flag before he was appointed Commander-in-Chief Mediterranean and hoisted his flag in H.M.S. *Victory*, May 25th, 1803, after a period of over 18 months ashore. So it is hardly correct to say that he transferred his flag from the *Foudroyant* to the *Victory*.

Yours faithfully,
Westcliff-on-sea B. LAVIS.

TELEVISION

Those of our readers who have television sets will be interested in the series of demonstrations given in the programme "Telescope" on alternate Saturday evenings between 5 or 6 p.m. They are entitled "Build Yourself a Model Yacht" and illustrate the building of a 30 in. model sharpie. Vincent Harris, the commentator, is instructing a boy of 13 years of age who is actually building the boat before one's eyes. The series will be complete in April when boats made from the instructions may be entered for competition. The awards will be made on workmanship, and performance when sailing, and the winning boats will be exhibited at *The Model Engineer* Exhibition in August. An interesting point is that the model is based on the design published in our recent book. *Build Yourself a Model Yacht* by W. J. Daniels and H. B. Tucker.

News from the Clubs

THE MODEL POWER BOAT ASSOCIATION

At a committee meeting held recently the following matters were discussed and decisions made :—

Record Claims

The following claims were ratified :

Class A.—K. G. WILLIAMS (Bournville) *Faro* : 1,000 yd. 49.4 m.p.h., 300 58.8 m.p.h.

Class B.—G. LINES (Orpington), *Sparky II* : 500 yd. 61.0 m.p.h., 300 64.6 m.p.h.

Class C.—R. Phillips (S. London), *Foz* : 500 yd. 52.4 m.p.h.

Class D.—H. KARSLAKE (Kingsmere), *Boz* : 300 yd. 37.8 m.p.h.

Festival of Britain

The M.P.B.A. have been asked to demonstrate model power boats in a pond to be provided on the South Bank Exhibition site, London. Provisionally, the M.P.B.A. will demonstrate every third weekend (Saturday and Sunday afternoons) from May to September. Travelling expenses are being met by the Exhibition organisers and all clubs within reasonable distance of the exhibition are asked to give the utmost support. There will be further discussion on this matter at the A.G.M. At the moment it seems that the pond will be small and only the smaller speed craft and straight running boats will be suitable.

M.P.B.A. and Australia

It was agreed that by arrangement with the Sydney S.M.E. this leading Australian Society should be affiliated to the M.P.B.A. and be our respresentative in Australia for the purpose of the organisation of model power boat activities.

Club Championship

It was unanimously agreed by the committee, taking all facts into consideration, that the Orpington S.M.E. put up the best show this year and should be declared the winner.

Tunbridge Wells Museum

Models of boats to illustrate an exhibition of Water Transport are needed by the museum. Anyone with a model for loan in January are asked to contact the Curator, 42 Mt. Ephraim, Tunbridge Wells.

Hon. Sec. J. H. BENSON, 25, St. Johns Road, Sidcup, Kent.

BIRMINGHAM MODEL YACHT CLUB

The annual general meeting of the above club was held on November 9th, at the Albion Hotel. The meeting was fully representative of other Midland clubs and was presided over by Mr. L. T. Allen.

The Commodore presented his report and reference was made to the excellent facilities the club now possessed. Thanks were extended to the Birmingham parks committee for their undivided attention in the reconstruction of the pool's banks, edges, and paths which will ultimately provide the finest inland sailing water in the United Kingdom.

The club were fully prepared to stage the 1950-1951, 10-rater National Championship, and arrangements are already well under way.

The hon. treasurer produced his statement of accounts showing a substantial credit balance.

It was regretted that the " grandfather of model yachting" in the midlands, Mr. W. H. Davey, Bournville M.Y. & P.B.C. was unable to be present owing to ill health. Best wishes for a speedy recovery were passed unanimously.

SOUTHEND P.B.C.

The first annual dinner and prize giving was held at headquarters on Friday, November 3rd. Mr. E. Kingsbury presided.

Mr. Kingsbury remarked on the phenomenal growth of the club from a membership of seven in 1948, to over 50 at the present time, its members were of all ages, and came from all trades and professions. Model power boating was a fascinating all-the-year-round hobby and called for craftmanship in building and designing, and skill in operating, further it provided much social enjoyment. He thanked Messrs. Maxwell for the loan of their boating pool, during the time Southchurch Park Lake was empty. After dinner Mr. J. Scott gave a film show. Prizes were awarded as follows :

Club Championship (Fenton Cup) ...	Mr. C. Jarvis.
Runner Up	Mr. E. Kingsbury
Junior Championship Silver Cup ...	Mr. R. Walton
Winner Radio Control (Bradford Prize)	Mr. R. Salmon
Winner best Prototype (Short Prize) ...	Mr. S. Clarke
Winner Speed Championship SC. Cup	Mr. S. Jones

EASTBOURNE M.P.B. CLUB

This club continues to make good progress. Larger premises have been found for the workshop, the new address being 44a, Dudley Road. Over 40 ft. of benching has been installed, a test bench for diesel engines, and an office. Twelve cabin cruisers are under construction at present. The secretary, Mr. F. F. Bridges has now been appointed chairman and Mr. C. Foord, of 9, Ships Cottages, Meads, Eastbourne becomes the new secretary.

Y.M. 6m. O.A.

This club raced for the Gosnell Trophy at the Rick Pond, Hampton Court on a recent Sunday. The weather was fine with the wind rather light and variable, and some good racing was seen. The results were as follows :

1st.—N. D. HADFIELD, *Fantasy* : 47 pts.
2nd.—R. JURD, *Estella* : 41 pts.
3rd.—W. G. V. BLOGG, *Sharma* : 36 pts.

After the racing the members adjourned to the club house for teas, and Mrs. Gosnell presented the trophy ; which is a beautiful model in silver of Mr. Gaskell's " A " Class *Herald*.

THE THAMES SHIPLOVER'S SOCIETY

The modelmakers meeting this month will be held on Thursday, the 11th, when slides of some of the ship models at the Science Museum will be shown.

Please note that the " big " meeting this month will be held on board the *Wellington* by courtesy of the Honourable Company of Master Mariners, when their film of the 4 m. barque *Peking*, now the training ship *Arethusa*, will be shown, the commentary being given by Commander J. R. Williams, R.D., R.N.R., Commander Williams spent his apprenticeship in sail, serving on the *Penthesilea*, one of the famous " Sierra " line, and on the *Pass of Balmana*, which later became the German raider *Seeadler*.

HAMMERSMITH SHIP MODEL SOCIETY

This society meets on the second Wednesday of each month at 186, Hammersmith Road, W.6, at 7.30 p.m. At the January meeting, Mr. A. L. Tucker of the National Maritime Museum will give a talk on " Rigging." Visitors are always welcomed. Hon. Sec. R. C. BUTLER, 29, Barnes Avenue, Barnes, S.W.13.

Notices

The Editor invites correspondence and original contributions on all subjects connected with model ships and power boats, which should be addressed to him at 23, Great Queen Street, London, W.C.2. Matter intended for publication should be clearly written, and should always bear the sender's name and address.

All correspondence relating to sales of the paper should be addressed to THE SALES MANAGER and correspondence relating to display advertisements to THE ADVERTISEMENT MANAGER.

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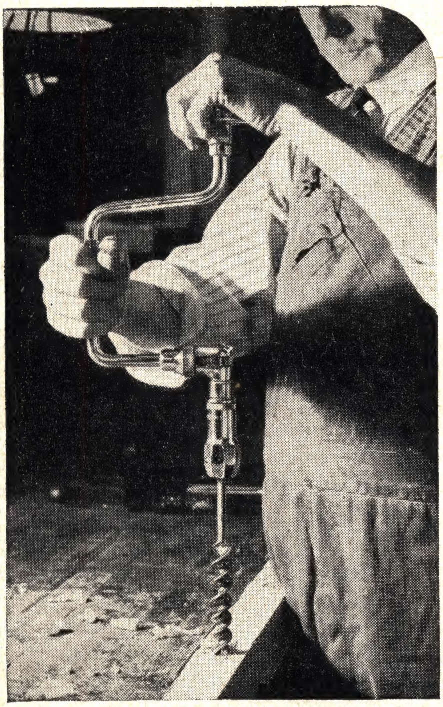

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